

A Review on Stormwater Harvesting and Reuse

Authors : Fatema Akram, Mohammad G. Rasul, M. Masud K. Khan, M. Sharif I. I. Amir

Abstract : Australia is a country of some 7,700 million square kilometres with a population of about 22.6 million. At present water security is a major challenge for Australia. In some areas the use of water resources is approaching and in some parts it is exceeding the limits of sustainability. A focal point of proposed national water conservation programs is the recycling of both urban storm-water and treated wastewater. But till now it is not widely practiced in Australia, and particularly storm-water is neglected. In Australia, only 4% of storm-water and rainwater is recycled, whereas less than 1% of reclaimed wastewater is reused within urban areas. Therefore, accurately monitoring, assessing and predicting the availability, quality and use of this precious resource are required for better management. As storm-water is usually of better quality than untreated sewage or industrial discharge, it has better public acceptance for recycling and reuse, particularly for non-potable use such as irrigation, watering lawns, gardens, etc. Existing storm-water recycling practice is far behind of research and no robust technologies developed for this purpose. Therefore, there is a clear need for using modern technologies for assessing feasibility of storm-water harvesting and reuse. Numerical modelling has, in recent times, become a popular tool for doing this job. It includes complex hydrological and hydraulic processes of the study area. The hydrologic model computes storm-water quantity to design the system components, and the hydraulic model helps to route the flow through storm-water infrastructures. Nowadays water quality module is incorporated with these models. Integration of Geographic Information System (GIS) with these models provides extra advantage of managing spatial information. However for the overall management of a storm-water harvesting project, Decision Support System (DSS) plays an important role incorporating database with model and GIS for the proper management of temporal information. Additionally DSS includes evaluation tools and Graphical user interface. This research aims to critically review and discuss all the aspects of storm-water harvesting and reuse such as available guidelines of storm-water harvesting and reuse, public acceptance of water reuse, the scopes and recommendation for future studies. In addition to these, this paper identifies, understand and address the importance of modern technologies capable of proper management of storm-water harvesting and reuse.

Keywords : storm-water management, storm-water harvesting and reuse, numerical modelling, geographic information system, decision support system, database

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